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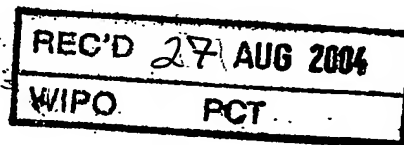
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This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 CFR 1.53 (c).

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Date of Deposit: August 29, 2003

INVENTOR(S)					
Given Name (first and middle [if any])		Family Name or Surname		Residence (City and either State or Foreign Country)	
Jonathan T. Andy		Grunow Souders		Knoxville, TN Knoxville, TN	
<input type="checkbox"/> Additional inventors are being named on the _____ separately numbered sheets attached hereto					
TITLE OF THE INVENTION (280 characters max)					
A REAR PROJECTION TELEVISION RECEIVER OPTICAL SCREEN MOUNTING SYSTEM					
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Address		345 SCARBOROUGH ROAD			
Address		P. O. Box 3001			
City		BRIARCLIFF MANOR		State	NY
Country		USA		Telephone	(914) 333-9611
				Fax	(914) 332-0615
ENCLOSED APPLICATION PARTS (check all that apply)					
<input checked="" type="checkbox"/> Specification Number of Pages		8		<input type="checkbox"/> CD(s), Number	
<input checked="" type="checkbox"/> Drawing(s) Number of Sheets		3		<input type="checkbox"/> Other (specify)	
<input type="checkbox"/> Application Data Sheet. See 37 CFR 1.76					
METHOD OF PAYMENT OF FILING FEES FOR THIS PROVISIONAL APPLICATION FOR PATENT (check one)					
<input type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27.					
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Respectfully submitted:

SIGNATURE

Date

TYPED or PRINTED NAME

EDWARD W. GOODMAN

REGISTRATION NO.: 28,613

(if appropriate)

Docket Number:

US030299

TELEPHONE

(914) 333-9611

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22194 U.S. PTO

60/49856

08/29/03

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of
JONATHAN T. GRUNOW, ET.AL.

Atty. Docket
US030299

Serial No.

Group Art

Filed: CONCURRENTLY

Examiner

Title: A REAR PROJECTION TELEVISION RECEIVER OPTICAL SCREEN
MOUNTING SYSTEM

Honorable Commissioner for Patents
Alexandria, VA 22313

APPOINTMENT OF ASSOCIATES

Sir:

The undersigned Attorney of Record hereby revokes all prior appointments (if any) of Associate Attorney(s) or Agent(s) in the above-captioned case and appoints:

EDWARD W. GOODMAN

(Registration No. 28,613)

MICHAEL E. MARION

(Registration No. 32,266)

c/o U.S. PHILIPS CORPORATION, Intellectual Property Department,
P.O. Box 3001, Briarcliff Manor, New York 10510, his Associate Attorney(s)/Agent(s) with all the usual powers to prosecute the above-identified application and any division or continuation thereof, to make alterations and amendments therein, and to transact all business in the Patent and Trademark Office connected therewith.

ALL CORRESPONDENCE CONCERNING THIS APPLICATION AND THE LETTERS PATENT WHEN GRANTED SHOULD BE ADDRESSED TO THE UNDERSIGNED ATTORNEY OF RECORD.

Respectfully,


Michael E. Marion, Reg. 32,266
Attorney of Record

Dated at Tarrytown, New York
this 25TH day of June, 2001.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of

Atty. Docket

JONATHAN T. GRUNOW, ET.AL.

US030299

Serial No.

Group Art Unit:

Filed: CONCURRENTLY

Examiner:

Title: A REAR PROJECTION TELEVISION RECEIVER OPTICAL SCREEN
MOUNTING SYSTEM

Honorable Commissioner of Patents
Alexandria, VA 22313


AUTHORIZATION PURSUANT TO 37 CFR §1.136(a)(3)
AND TO CHARGE DEPOSIT ACCOUNT

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The Commissioner is hereby requested and authorized to treat any concurrent or future reply in this application requiring a petition for extension of time for its timely submission, as incorporating a petition for extension of time for the appropriate length of time.

Please charge any additional fees which may now or in the future be required in this application, including extension of time fees, but excluding the issue fee unless explicitly requested to do so, and credit any overpayment, to Deposit Account No. 14-1270.

Respectfully submitted,

By 
Edward W. Goodman, Reg. 28,613
Attorney
(914) 333-9611

A REAR PROJECTION TELEVISION RECEIVER OPTICAL SCREEN MOUNTING SYSTEM

BACKGROUND OF THE INVENTION

Field Of The Invention

[0001] The subject invention relates to rear projection television receivers, and more particularly to a system for mounting an optical screen in the rear projection television receiver.

Description Of The Related Art

[0002] Fig. 1 shows a schematic block diagram of a typical rear projection television receiver. Television signals are received by antenna 10 and applied to television circuits 12. While antenna 10 is shown, it should be understood that the television signals may originate from various other sources, for example, cable television, a satellite television receiver, a video cassette recorder/player, or a DVD player. Television circuits 12 process the received television signals and supply display video signals for display. To that end, panel driver circuits 14 receive the display signals and apply controlling signals to a display panel array 16. A power supply 18 supplies operating power to the television circuits 12, the panel driver circuits 14, and to a light source 20 for illuminating the display panel array 16. The video signals from the display driver circuits 14 cause the display panel array 16 to modulate the light beams emanating from the light source 20. The modulated light beams are then focused by projection lenses 22 onto a Fresnel lens 24, which collimates the projected light beams into parallel lines to an optical display screen in the form of a display lens array 26. The display lens array 26 then spreads the collimated light rays into the viewing area.

[0003] A problem that arises with the display lens array is that any bowing of the display lens array results in significant inward pin-cushioning of the displayed image. In rear projection television receivers in which the projecting light beams are formed by cathode ray tubes instead of light impinging a display panel array, this pin-cushioning may be corrected electronically. However, in display panel array-type projection television receivers, in which the display panel array is in the form of a matrix display, e.g., liquid crystal or plasma display (LCD) or deformable mirror display (DMD) devices, such a correction is not generally

provided. While technologies exist to provide this functionality, it can only be done at a high incremental cost.

[0004] Prior art rear projection television receivers having matrix display panels cope with this problem by increasing the thickness of the display lens array to achieve additional stiffness thereby reducing the tendency of curvature in the display lens array, which in turn, reduces the non-linearity. However, this increased thickness increases the weight of the display lens array as well as the cost of manufacturing the same. Further, this increased thickness may adversely affect the optical performance. As such, thin screens have been predominantly chosen for increased optical performance.

10

SUMMARY OF THE INVENTION

[0005] It is an object of the invention to provide a mounting system for the optical display screen of a rear projection television receiver which compensates for any bowing in the optical display screen thereby enabling the use of a thin optical display screen.

15 [0006] This object is achieved in a mounting system for use in mounting an optical display screen in a rear projection television receiver, said mounting system comprising mounting means formed on a housing of said rear projection television receiver, and a plurality of mounting bracket assemblies, each of said mounting bracket assemblies comprising means for connecting said mounting bracket assembly to said optical display screen; means for
20 attaching said mounting bracket assembly to said mounting means; and means for elastically coupling said connecting means to said attaching means, wherein said elastic coupling means applies a stretching force from said attaching means to said optical display screen via said connecting means thereby eliminating any bowing in said optical screen.

[0007] By stretching the mounting bracket to engage with the mounting means on the
25 housing of the rear projection television receiver, tension is provided to the optical display screen, the amount of which can be designed to suit the application, i.e., for different screen sizes. Because of the use of high-bond adhesives to bond the mounting bracket assemblies to the optical display screen, no holes are required in the optical display screen. This leads to a higher yield in the optical display screens in that adding holes to the optical display screens
30 increases the risk of damage to the optical display screens, and the added holes may not be sufficiently robust to handle the stresses required to straighten the optical display screen.

[0008] The mounting bracket assembly of the subject invention may be used to mount optical display screens of any thickness, and is not restricted to only thin optical display screens, in that the mounting bracket assembly provides a measure of shock protection to the optical display screens, i.e., holding them secure but not rigidly.

5

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] With the above and additional objects and advantages in mind as will hereinafter appear, the invention will be described with reference to the accompanying drawings, in which:

- 10 [0010] Fig. 1 shows a block schematic diagram of a rear projection television receiver;
[0011] Fig. 2 shows a plan view of a first embodiment of a mounting bracket assembly in accordance with the invention;
[0012] Fig. 3 shows a side view of the mounting bracket assembly of Fig. 2;
[0013] Fig. 4 shows a plurality of mounting bracket assemblies of Fig. 2 formed
15 together;
[0014] Fig. 5 shows an embodiment of the mounting means on the housing of the projection television receiver;
[0015] Fig. 6 shows a second embodiment of the mounting bracket assembly of the subject invention; and
20 [0016] Fig. 7 shows a third embodiment of the mounting bracket assembly of the subject invention, which is a modification of the mounting bracket assembly shown in Fig. 5.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

- [0017] Figs. 2 and 3 show a first embodiment of a mounting bracket assembly of the
25 subject invention. The mounting bracket assembly 100 includes a display screen connecting section 102 for connecting the mounting bracket to an optical display screen of a rear projection television receiver. The connecting section 102 includes a U-shaped channel 104 into which an edge of the optical display screen may be inserted. The connecting section 102 is then affixed to the optical display screen by way of a high-bond adhesive, such as VHB made
30 by 3M Corporation. The mounting bracket assembly 100 further includes a housing attaching section 106 which includes a through-hole 108 for engaging mounting means in the housing of

the television receiver. The connecting section 102 and the attaching section 106 are interconnected by a coupling section 110. The coupling section 110 is capable of exerting a tension between the connecting section 102 and the attaching section 106 when the coupling section is stretched. To that end, at least the coupling section of the mounting bracket assembly 5 100 may be formed of an elastic material, such as rubber. To ease in manufacture, the entire mounting bracket assembly 100 may be injection molded out of a rubber-like substance, in which the dimensioning of the connecting and attaching sections 102 and 106 are such that added stiffness is achieved over that of the coupling section 110.

[0018] As shown in Fig. 4, multiples ones of the mounting bracket assemblies 100 may be formed together to form an elongated mounting bracket 112. 10

[0019] Fig. 5 shows an example of means for mounting the mounting bracket assemblies 100 to the housing of a rear projection television receiver. In particular, a portion of the rear projection television receiver housing 120 is shown. The housing 120 includes a substantially rectangular opening 122 over which the optical display screen is mounted. At 15 appropriate positions around the periphery of opening 122, bosses 124 are formed on the housing 120. These bosses 124 are sized to engage the through-holes 108 in the mounting bracket assembly 100. When the through-holes 108 engage the bosses 124, the mounting bracket assembly 100 may be retained in position by use of screws in the bosses 124. Instead of the bosses 124, pins may be positioned accordingly for engaging the through-holes 108 in the 20 mounting bracket assemblies 100.

[0020] The bosses 124 (or pins) on opposing sides of the opening 122 are positioned such that when the through-holes 108 in the mounting bracket assemblies 100 engage the bosses 124 on opposing sides of the opening 122, the coupling section 110 exerts a tension on the optical display screen affixed to the connecting section 102 of the mounting bracket 25 assembly 100.

[0021] Fig. 6 shows an alternate embodiment of the mounting bracket assembly 100', in which the connecting section 102' is formed by a pad 130 which may be cemented to a surface of the optical display screen 132. The Attaching section 106' is then formed by a U-shaped channel 134 for engaging a mounting rail 136. Again, the coupling section 110 of the mounting 30 bracket assembly 100' elastically connects the connecting section 102' to the attaching section 106'. The mounting rail 136 has a first, tongue portion 138 for engaging the channel 134 in the

attaching section 106', a second portion 140 for supporting the optical display screen 132, and a third portion 142 having a through-hole 144 for engaging the bosses 124 (or pins) in the housing 120. In use, the pads 130 are cemented to the surface of the optical display screen 132, and the mounting rail 136 is mounted to the housing 120 using the bosses 124 for engaging the
5 through-holes 144 in the mounting rail 136. The coupling sections mounting bracket assemblies 100' are then stretched such that the U-shaped channels 134 in the attaching sections 106' engage with the first portion 138 of the mounting rail 136. The first portion 138 may be affixed to the attaching sections 106' of the mounting bracket assembly 100' by friction or, alternatively, by use of a cement adhesive.

10 [0022] In an alternate embodiment, Fig. 7 shows a mounting bracket assembly 100" substantially similar to the mounting bracket assembly 100' shown in Fig. 6. In particular, the U-shaped channel 134' of the attaching section 106" further includes projections 146 for frictionally engaging the first portion 138 of the mounting rail 136.

[0023] Numerous alterations and modifications of the structure herein disclosed will
15 present themselves to those skilled in the art. However, it is to be understood that the above described embodiment is for purposes of illustration only and not to be construed as a limitation of the invention. All such modification which do not depart from the spirit of the invention are intended to be included within the scope of the appended claims.

CLAIMS:

1. A mounting system for use in mounting an optical display screen in a rear projection television receiver, said mounting system comprising mounting means on a housing
5 of said rear projection television receiver, and a plurality of mounting bracket assemblies, each of said mounting bracket assemblies comprising:
means for connecting said mounting bracket assembly to said optical display screen;
means for attaching said mounting bracket assembly to said mounting means;
10 and
means for elastically coupling said connecting means to said attaching means, wherein said elastic coupling means applies a stretching force from said attaching means to said optical display screen via said connecting means thereby eliminating any bowing in said optical display screen.
15
2. The mounting system as claimed in claim 1, wherein said connecting means comprises an area of said mounting bracket assembly for bonding said mounting bracket assembly to said optical screen.
- 20 3. The mounting system as claimed in claim 2, wherein said area of said mounting bracket assembly comprises a u-shaped channel formed in said mounting bracket assembly for receiving an edge of said optical screen.
4. The mounting system as claimed in claim 3, wherein said mounting means
25 comprises bosses strategically formed in the housing of the rear projection television receiver, and said attaching means comprises a through-hole formed in each of the mounting bracket assemblies for engaging, respectively, the bosses formed in the housing.
5. The mounting system as claimed in claim 2, wherein said area of said mounting
30 bracket assembly comprises a pad formed in each of said mounting bracket assemblies for bonding each of said mounting bracket assemblies to said optical display screen.

6. The mounting system as claimed in claim 5, wherein said attaching means comprises a U-shaped channel formed in one end of each mounting bracket assembly, and a mounting rail having a tongue section for engaging each of the U-shaped channels in the mounting bracket assemblies, said mounting rail having means for engaging the mounting means in the housing of said rear projection television receiver.

7. The mounting system as claimed in claim 6, wherein said tongue section of the mounting rail is bonded to each of said mounting bracket assemblies in the respective U-shaped channel.

8. The mounting system as claimed in claim 6, wherein said tongue section of the mounting rail is secured to each of said mounting bracket assemblies in the respective U-shaped channel by friction.

9. The mounting system as claimed in claim 8, wherein each of said U-shaped channels is formed with projections therein for frictionally engaging the tongue section of said mounting rail.

10. The mounting system as claimed in claim 1, wherein said elastic coupling means comprises said mounting bracket assembly being formed by a rubber-like material at least between said connecting means and said attaching means, said rubber-like material allowing the elastic coupling means to stretch by a predetermined amount thereby exerting tension on the optical display screen.

ABSTRACT

A mounting system for an optical display screen of a rear projection television receiver, provides tension to the optical display screen thereby eliminating, or substantially
5 reducing any tendency of the optical display screen to bowing or curvature. Elastic mounting
bracket assemblies are attached, using an appropriate adhesive, to the periphery of the optical
display screen at strategically optimum positions. These mounting bracket assemblies are then
stretched to engage corresponding mounting bosses formed in the housing of the rear
projection television receiver, thereby imparting a stretching force on the optical display
10 screen.

1/3

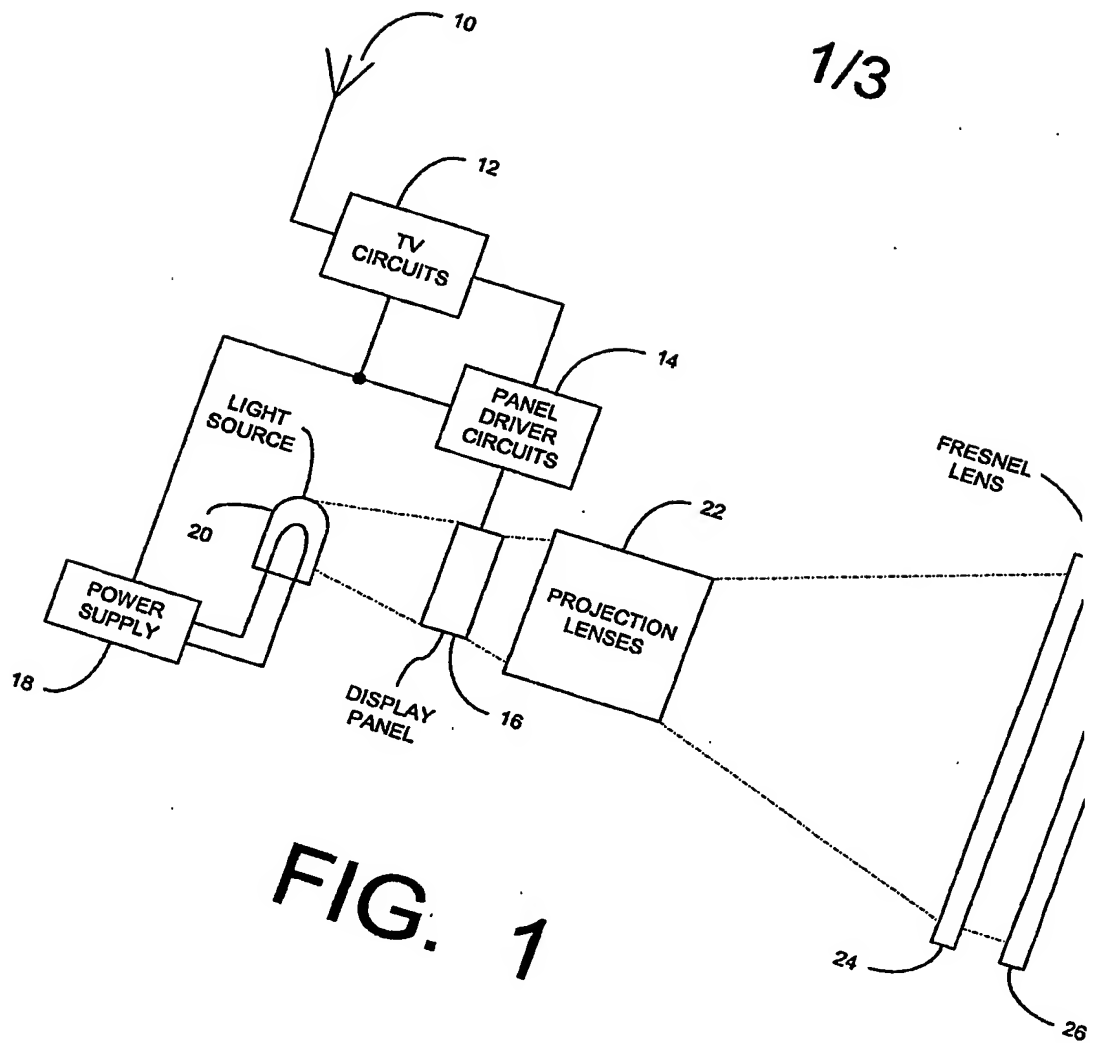


FIG. 1

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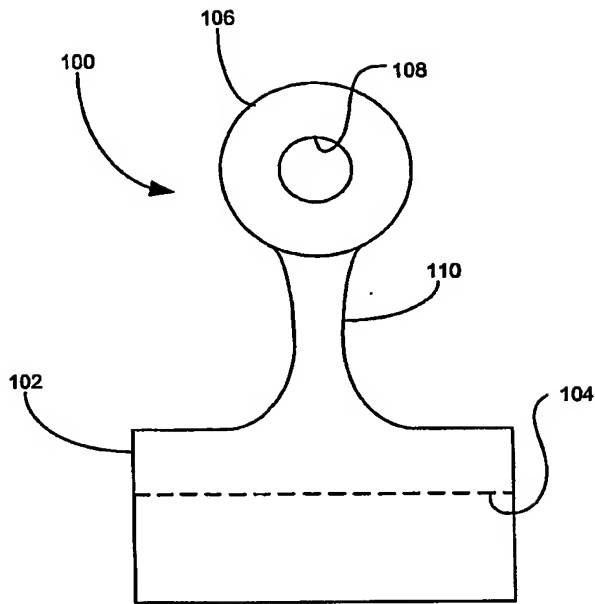


FIG. 2

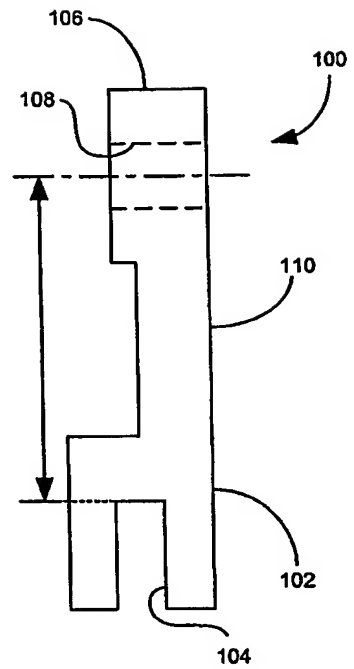


FIG. 3

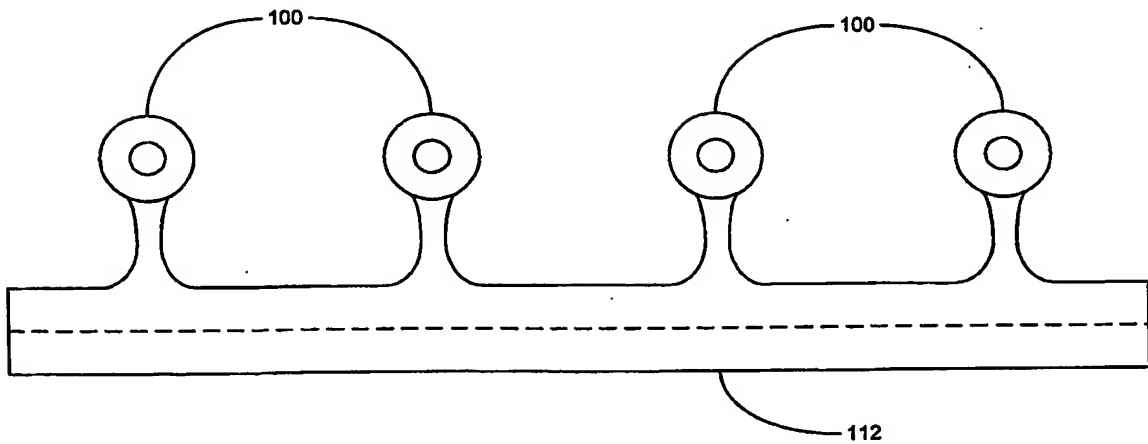


FIG. 4

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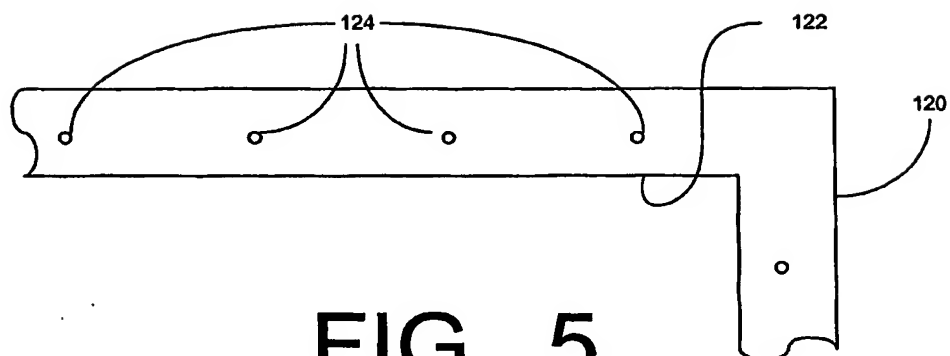


FIG. 5

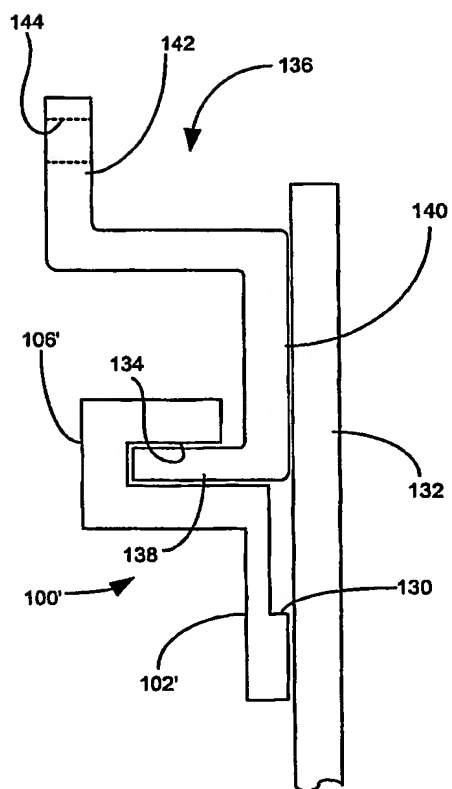


FIG. 6

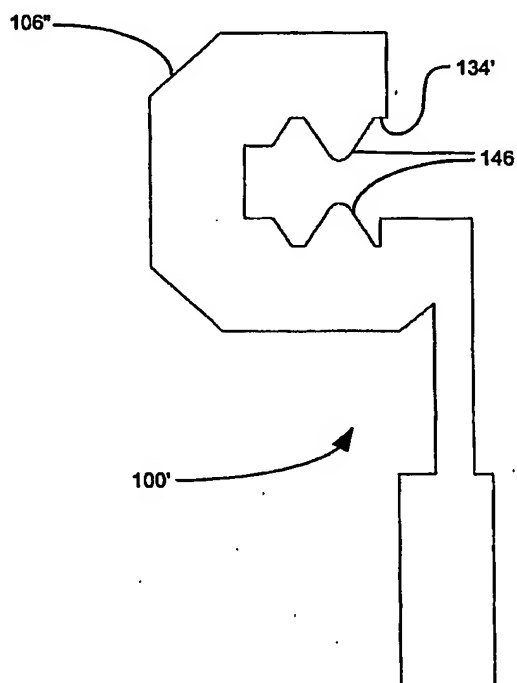


FIG. 7

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